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2



Puppetools—a communication system for teachers at all levels—is fast becoming an **information-age education movement**—even those who have not given the idea of using puppets a second thought.

For teachers who reach kids and deliver information using puppets, the process of learning and communicating is truly a living thing. Communicative play behavior has evolutionary roots deep within the nature of learning. If you believe that teaching is meant to be a liberating and uplifting personal and professional experience and that teachers must find new tools to help move themselves and their students beyond the system's cultural and bureaucratic trappings, then you've arrived at the right place.

Puppetools' Education Mission:

③

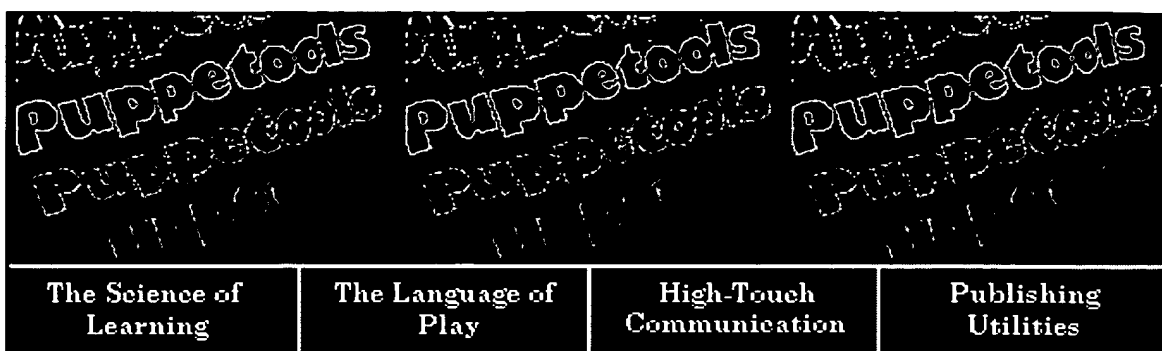
3/1/2000

- To equip teachers with extraordinary tools... tools that help them become more creative, confident, productive and happy (and less stressed) in their teaching
- To equip teachers with a unique set of communication skills that enable them to reach students more meaningfully
- To help teachers move their curriculum into the flow of hands-on experience, easily and practically
- To save teachers time by helping them to synthesize elements of the curriculum
- To foster higher levels of interest, productivity, and participation in students

We were not ready for our September 9 start-up date. But we still plan to launch what we believe will be one of the most exciting teaching resources in education --a working laboratory you can visit, observe, or participate in; video segments of Puppetools classrooms and workshops, and patterns you can download. Come join our network of pioneering educators. It truly is a new classroom--and a new media--we are building. If you wish to be contacted when Puppetools is up and running, please e-mail us below with a note or write 'contact me' in the subject.

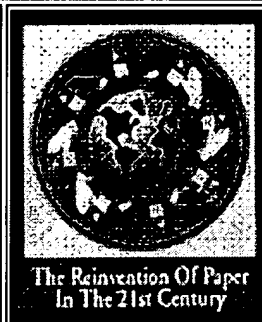
Jeffrey L. Peyton, Founder





The Ancient Art Reinvented and Redefined

Just as graphical interfaces like "Windows" unlocked computers from straight lines of text, Puppetools lifts the world of ideas and communication into "a visual, interactive language." Puppetools is a dynamic social language that empowers shared learning experiences, and transforms learning environments--along with the people who work in them.

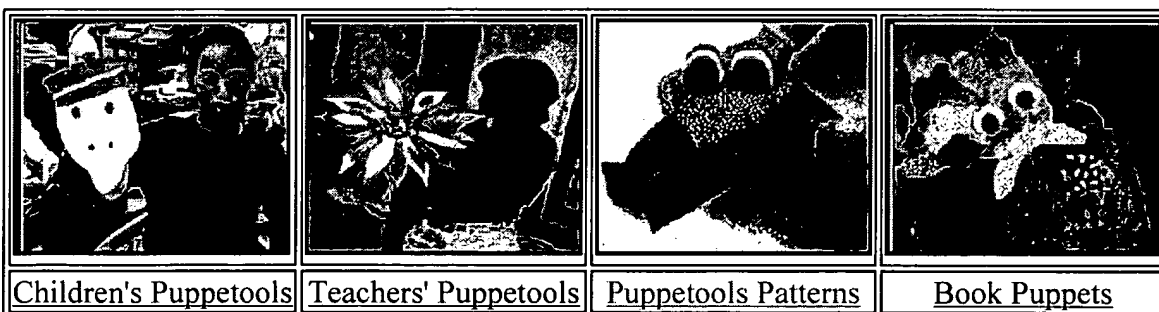


Puppetools has harnessed the universal energy and appeal of puppetry for mass communication. A million genies are "out of the lamp," adding a powerful, interactive communication component to books, software, and other products. For business, Puppetools opens a window on the "High-Touch" horizon.



Brief Orientation

Puppetools Showcases



Children's Puppetools

Teachers' Puppetools

Puppetools Patterns

Book Puppets

Education Services

- ✱ • Puppetools On-line Course
- Puppetools On-site Programs
- Programs Methodology


Resources

- Product Catalogue
- Online Make & Take
- Puppet Resource & Pattern

Business Services

- Custom Publishing & Mfg.



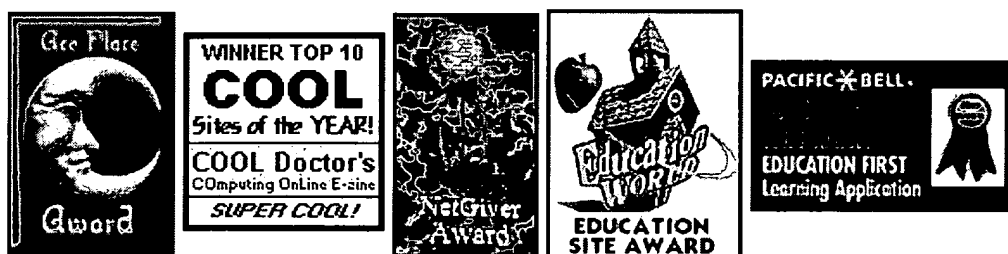
 <ul style="list-style-type: none"> • The Einstein Curriculum--On-line Course/ See the Einstein Curriculum white paper below • U.S. Dept. of Education, Puppetools Course Listings • Fees 	<p><u>Library</u></p>	<ul style="list-style-type: none"> • Licensing • Custom Kits • The Book Utility • The Software Utility • Ad Specialties
<p>Marketplace of Ideas</p> <ul style="list-style-type: none"> • Why Children Talk to Puppets • Puppets & Computers • Children's Books & School Reform • Puppet Language & Brain Science • The Reinvention of Paper • Notes & Observations • Marketplace Index 	<p>Research</p> <ul style="list-style-type: none"> • Teacher Journals • National Science Foundation Paper, Diverse Applications of Play as A Learning System • Puppets in College • Foreign Language • Videography • The Einstein Curriculum • Brain Science & Play Behavior • Lizards, Limbic & Logic • Communicative Play • The Nature of Learning • References 	<p>General Index & Links to Other Sites</p> <ul style="list-style-type: none"> • Press Release • Puppetools Background • User Puppet Concept Log • Feedback & Participation

Inventions for Reinventing People

Puppet Utility (US Patent 4,880,404)

Paper, [Vinyl](#); Paper Talker® Puppet Utility (US Patents 4,555,236 and 4,869,702)

Webmaster for this site is [Jeffrey L. Peyton](#)



The Kennedy Center for The Performing Arts, Washington, D.C.

This website has been developed in collaboration with Stone Communications, Inc.

This site has been accessed 10489 times.





What is Puppetools?

Puppetools is the company that "lets the genie out of the lamp," making puppets an everyday ingredient of books, computers, and other products. Puppetools has advanced the concept of "high touch" communication in which paper is applied as a standard utility.

The products and services of Puppetools, Inc. are based on an original program of education developed by Jeffrey L. Peyton. Puppetools' patented devices, called *Publishing Utilities*, form the technical foundation of Puppetools.

* The puppet inventions, the *Paper Talker®* and the *Picture Puppet*, are made available under US Patents 4,555,236 and 4,880,404.

Education & Training

* Educational seminars on the subject of puppets as tools for teaching, learning & communication are offered in the following areas:

- Teacher Education(Online or Onsite)
 - Children's Programs
- Marketing & Public Relations

Program & Product Development

Services related to the use of puppets as tools for marketing, promotion, public relations and the development of custom puppet concepts for organizations and businesses are offered for the following:

Logos, Symbols, Mascots and Theme Development Educational Programs including Books and Media Production, Conference Kit Components Premiums, Novelties

Manufacturing & Custom Publishing

Custom Manufacturing and Publishing expertise is offered in the design and production of puppet concepts and related products, kits, components and novelties for toy manufacturers, publishers of books, videos, and software; advertising, marketing, public relations.

Licencing

The Puppetools® programs and utilities are available for commercial application in product form and to



third parties agencies, schools, organizations businesses and manufacturers under license contract.

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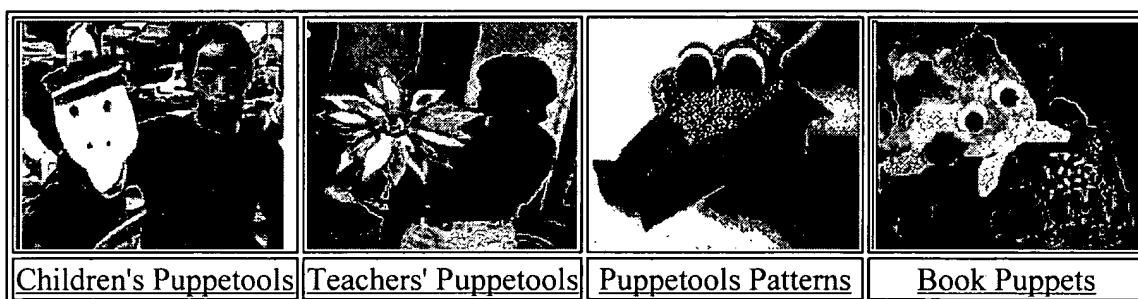
PUPPETOOLS ONLINE PUPPET PATTERN & RESOURCE LIBRARY



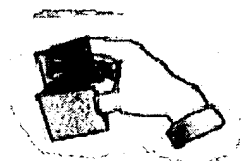
24 Hour Emergency Puppet Service

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The Paper Talker® Puppet



"Hi. I'm the Paper Talker hinge I am the key to a puppet-making system. You insert your fingers and thumb in the hinge pockets. You attach pattern parts to me like this. I am a puppet puzzle." With a

pattern, your whole class or group can make me again and again--but with endless opportunity for individual creativity."

Puppets Online

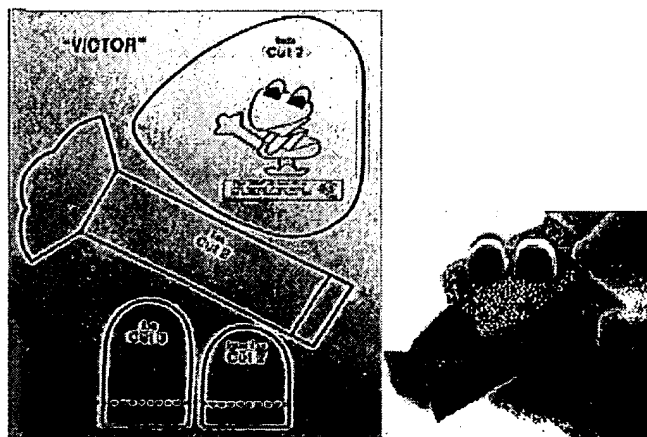
"Use me and my puppet friends

- for school projects
- for birthday party activity & favors
- for rainy day activity at home
- for special event activity booths"



About The Patterns

Teachers and children who participate in Puppetools workshops learn how to make puppets without use of patterns. However, the patterns are useful and have a legitimate role to play in the creative process. They make an excellent home or school resource and can be adapted to projects that call for a specific concept or design.



You may copy this pattern. Enlarge at 70% to make the frog shown at right.



How To Use The Patterns

You cut out the pattern shapes (keep them together in a bag).

You trace the shapes onto construction paper,

Cut the traced shapes out,

Then assemble them onto the hinge.

Use the pattern to make the basic puppet shapes. Add colorful details to your puppet by using books or pictures.

The Showcase of Teacher Made Puppets, along with our collection of Teacher Journals, supports a basic



conviction that underlies the development of Puppetools: that career-sustaining creativity is not the domain of a few teaching talents, but is within reach of the gifted many.

Whether you prefer the patterns or the teacher-made creations, The Puppetools Online Pattern & Resource Library has been developed to serve as a "show & tell" center-- the place where ideas become shapes and patterns of things to come.

How to Order the Patterns

Order patterns from the Puppetools Catalogue. Currently, the patterns are sold in sets of 8. We are exploring the possibility of an a la carte selection.

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The Puppetools Computer Utility

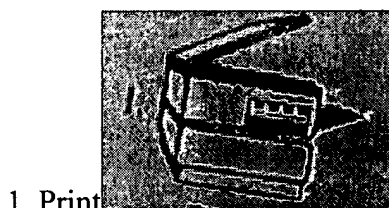
Benefits and Implications of a High-Touch/ High-Tech Merger

Off the Screen & Into the Hand

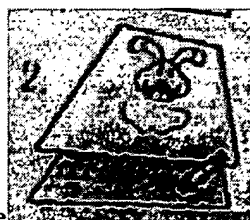
The Puppetools invention enables the subject elements to take on life outside the program. The cyberspace and real space merge into a living dynamic. The transformational impact of the screen-to-hand scenario occurs in the flow of experience. Interactivity moves *through the screen into the hand*.

How It Works

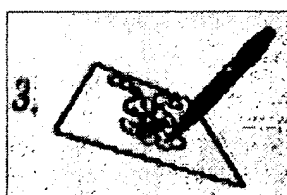
1. Print the puppet part or image
2. Glue to card paper
3. Color the image or trace onto construction paper
4. Cut the image or puppet part
5. Make puppet hinge
6. Affix puppet parts to hinge



1. Print



2. Glue



3. Color



4. Cut



5. Fold Hinge



6. Attach

A word to software producers

If education is first and foremost a communication process, and since it is generally agreed that

(12)

technology appears to bring about accelerated change, we need to consider the implications of a humanizing element effectively embedded in educational technology. Computer education software programs will benefit from a highly visible human element that extends into the dynamics of the classroom.

High-Tech Program with A Human Touch... Educators could never justify having kids sit in front of the screen all day long. However, a software program that promotes adult creativity and interaction with the group would significantly increase the overall use and perceived-value of that program.

Marketing Edge: A programmatic element that offers the user a new way to impact the group would constitute a unique feature in high-tech educational and game programs.

A Product With Mother Nature on its Side: Communicative play is evolutionary, family-related behavior in which adult mammals nurture, inform, and prepare their young. A well-conceived and scientifically-based learning program should include the adult as well as the child. Play is nature's learning language. The nature of the program is a piece of critical importance. A good program is in touch with the nature of things.

The Best "Surprise Inside" Since Cracker Jacks High-tech success is all about people. Planting a social facilitator in software programs gives computers a human dimension. This unexpected program element pulls the unsuspecting user in with a surprise, an "archived" seed whose product is discovered and appreciated because of the way in which it improves learning and the professional quality of life. By merging both media forms—high-touch and high-tech—a platform is created that impacts the whole user.

Make News and Grow The Market Concern about the powerful negative influence of high-tech culture on the young could be offset by incorporating a truly humanistic element in high-tech programs.

Headline: "Hi-Tech Product Equipped with High-Touch Tools" To the media and the markets evolving in their respective camps (reading advocates, child advocates, and high-tech futurists) the story in which apparently oppositional forces combine to reignite a successful stronger, more successful educational approach, would generate fascinating copy, colorful cover photo opportunities, and media coverage. It would generate strong human interest and set the stage for corporate good will, an important precursor to international marketing efforts.

A High-Tech Trojan Horse In order to win in the education arena, high technology proponents cannot put all of its eggs in high tech thinking. It must somehow personally connect with the consumer. By serving the human side of education, important middle ground can be captured.

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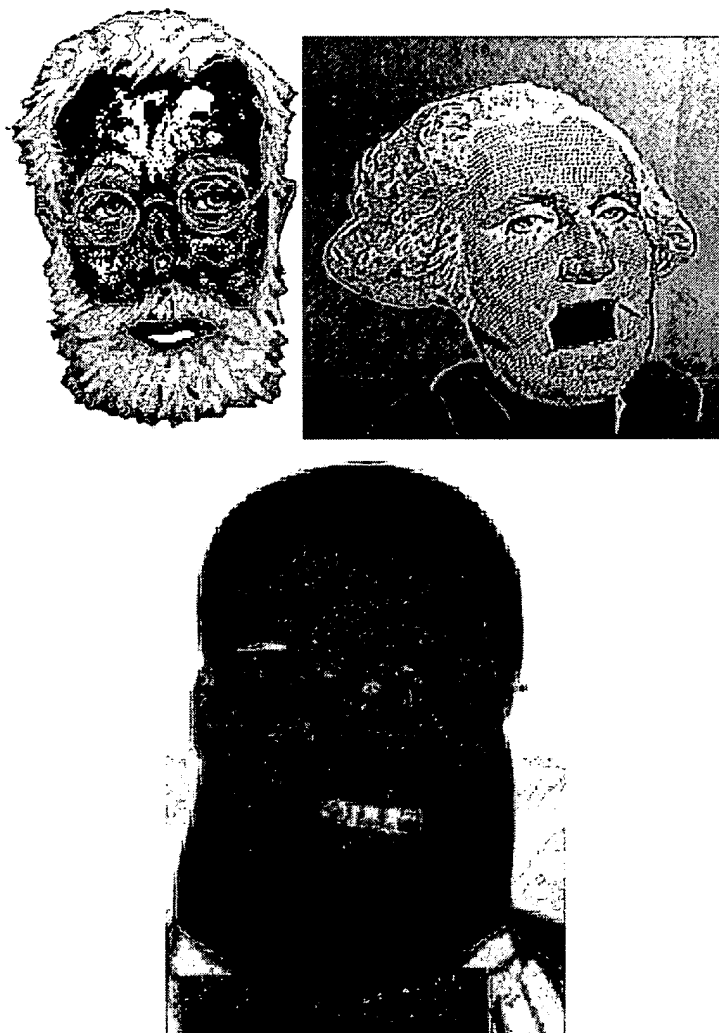


George Washington Sample Custom Vinyl Picture Puppet

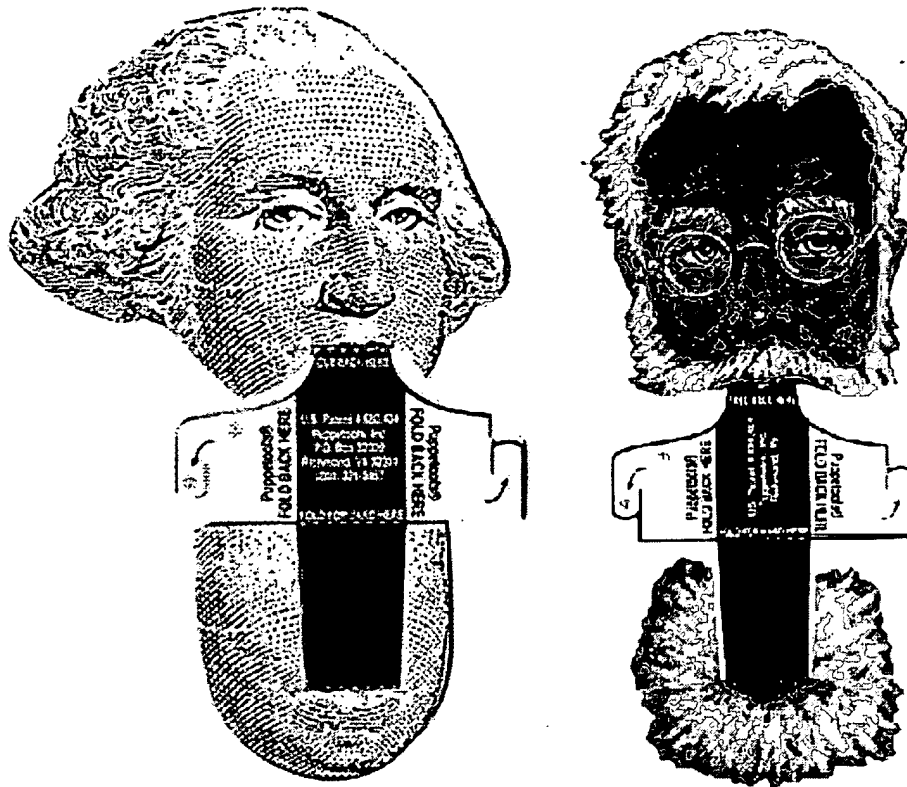
Any image can become an interactive, high-touch communication medium.

Printed on durable .10 white opaque vinyl.

Shown below are Picture Puppets of Elijah McCoy and George Washington, American Inventors



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Prices vary according to size and other specifications. We quote each job based on the art and specifications you provide. Color printing quotes on request. The above prices should be used for budgetary purposes only. Final pricing can only be given upon examination of art and formats. To qualify for the stated price, orders must be consistent with stated quantities. Prices are based on the George Washington puppet specifications only.

Qty Size 1 Color/ 4 Color (per piece)

- 5 M 4 X 6 .70
- 10 M 4 X 6 .55
- 25 M 4 X 6 .35
- 50 M 4 X 6 .30
- 100 M 4 X 6 .25
- 200 M 4 X 6 .39
- 500 M 4 X 6 .104

** Die Charges are billed separately

** Color Separations are billed separately.

** Development Time is billed at \$75.00 per hour. Simple designs may take as little as 2 hours to adapt to Puppetools formats.

Terms: Credit on approval. Payment for development costs and 33% of running costs must be remitted with your written purchase order. Balance: 33% on delivery. 33% due in 30 days. Shipped most economical way. Allow 6-8 weeks for delivery after final art approval. Rush jobs accepted whenever

(15)

possible: add 30%.

Educational Note About The Use of Picture Puppets:

Aside from their value as business novelties or product add-ons, the picture puppet concept offers schools the opportunity to make the teaching and learning of history and science truly interactive and experiential. Interviews, talk shows, and town meetings in which students and teachers bring subjects of history to life are an effective foundation for research and learning...a lot lighter than text books!

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Puppetools Online Course

Offered for Credit or Non Credit

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[Secondary Educators](#) / [Portfolios & Journals](#) / [Rationale](#) / [Syllabus](#)/ [Fees](#)

Course Description

A practical non-theatrical program that explores puppets as tools for learning and communication.

The Puppetools Orientation & Methodology

Puppets--Online?

While Mr. Peyton's work has normally been conducted in onsite situations, it is his belief that the online format allows students more practice time with the puppets in their classes as well as more feedback and "reality checking" time among the students themselves. The online format actually allows for a greater extraction of what is truly valuable about the puppet medium: namely, the relationships and enthusiasm that it build between people and ideas. The irony here is that a high-touch teaching system can actually be improved by high-tech orientation and training. After reviewing a videotape produced especially for this course, students will make puppets for use in their respective teaching situations under the guidance of Mr. Peyton. The online portions of the course will be used to convey and share experiences--what become the "before and after" perceptions and observations gained between sessions.

While participants are not able to physically reference each other's puppets, the videotape-showing teachers using the program provides an excellent reference for creative work. Even though participants can't experience the interpersonal spontaneity generated in the classroom setting, a deeper and richer side via written journals and online communication is the basis for an effective distance learning experience.

The technical and design aspects of the puppets, which are always interesting, are secondary and gradual improvements in construction are attained over time. The primary focus will be on applications and experiences.

Students are invited to depart from the planned syllabus to do independent, improvisational work with instructor's authorization.

Formats

A. 8 week course/ log on 3-5 times per week (may be modified)

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Target Audience:

Puppetools is intended for teachers, librarians, psychologists, therapists, and educators at all levels. Techniques developed in this course have been used in work with the blind, and in learning settings ranging from pre-K to college level foreign language classes.

The Building of Knowledge

The Puppetools online course fosters a physical and visual orientation requiring students to use an interactive, 3-dimensional ingredient in the communication process. It places a tool in the student's hand that helps promote the idea that teachers and learners share in constructing knowledge and curriculum.

The program serves as a humanizing utility to supplement current training, curriculum development, and continuing education courses.

Video Application

The use of video offers students a chance to view themselves speaking a creative language with their students. Students experience the change which puppets bring to the learning environment and will observe this metamorphosis. The nature of the puppet medium is both private and transpersonal. The puppet dynamic offers a mirror into the communicative self. Jazz music departs from its linear dimension and becomes selective, unfolding, improvisational, ever-searching. In communication, the puppet is a moving, visual dynamics rooted in play and a sister to jazz--the opposite of instructional--self-expressive and self-revealing.

The course requires teachers to keep journals to monitor and reflect on their experience. Both the journals and the video represent an excellent opportunity to hone the professional self-awareness and presence necessary for adults to *connect* with students in the classroom.

Secondary Educators: Speak A New Language/ Build a New Visual-Emotive Foundation to Learning and Communicating This work with puppets involves using a model of innovation whose effort has led to looking at paper in a new light. The paper puppet concept represents a new category of paper application: The precedent of paper used as "communication currency."

Through Puppetools the traditional hand puppet is transformed into a symbolic, living-color, paper language--a "paper telephone," giving paper a visual, interactive communication function. The student experience of participating in that transformation can mean as much, if not more, than simply learning communication techniques with puppets. The course serves to model and facilitate teachers who become transformative intellectuals. Any computer search using the term "Puppet" will produce ample evidence of the medium's use as a therapeutic tool. However, the notion that classroom teachers at all levels can use puppets--the premise of Puppetools--breaks new ground.

The notion reaches deep into personal teacher issues such as adult resistance, creativity and self-image, and control of vs. communication with students. For this reason, a course is offered on paper puppet design and communication technique for secondary level educators. The puppet medium needs to be brought out of the clinical setting into the mainstream classroom where its real power as a conceptual superconductor can be experienced. Middle school and secondary educators need exposure to this powerful language to counter their preconceptions.

Having established and identified successful models of puppet-use on the college level, it follows that



appropriate models can be developed for secondary level education. Secondary education students in my workshops discover that puppets are the means to a higher form of communication and literacy based in the human predisposition for conceptual and communicative play.

This work has merged with areas of behavioral and brain science. It is supported by the research of Dr. Laura Berk whose work on play theory has appeared in Scientific American, and Dr. Robert Provine, (Univ. of Maryland) whose work on laughter recently appeared in the New York Times. Charles Clark, the author of the creative thinking classic, Brainstorming, has called Puppetools "a social invention of great importance."

What Puppetools introduces is a product of invention: the recasting of an art whose true essence has not been seen or understood because it is buried under impractical, pre-established forms and concepts. In that sense, the exploration I have undertaken with puppets, and which can be shared with students whose work deals with people, concepts, and communication, represents a model of broad systemic reform. This "language made for communicating with the imagination" can serve as an excellent springboard for other explorations and inquiry.

High-Touch "Points of Interest" on the High-Tech Superhighway At the high-tech end of the communication spectrum, the computer opens its so-called "windows" on the world. At the high-touch end, teachers and learners build relationships and visual connections between themselves and the disciplines. Puppet media naturally merges information and imagination. Puppetools is the "High Touch" version of Microsoft's graphical software platform, "Windows."

Sample scenario: George Washington on the end of student John's hand is interviewed by teacher Mr. Jackson on a closed circuit tv program. Since George was really there when congress decided to print its money, Mr. Jackson uses "Math George" to introduce a unit on our monetary system and its origins. Puppet media helps adults to literally see relationships, ideas, and to physically move and manage them.

Portfolios & Journals

Online methods and practices will require Portfolio Development. Teachers and teachers-to-be will emerge from the experience equipped with new skills and self-generated resources that prepare them to be, in the best sense of the word, communicators.

Rationale

Education is based on the human process of communication. The use of puppets makes this emotive, hard-to-pin-down activity easier to grasp. The puppet dynamic is unique to human behavior and puppets are unique as teaching tools. They help children and teachers to grow, relate openly, be self-confident and expressive.

Unfortunately, there are barriers to puppet use in the classroom. Teachers don't want to "have to perform." Like many adults, they are held back by "the perfection syndrome" believing, incorrectly, that expensive puppets, scripts, and theater background are required--or "children won't buy it." Puppets, moreover, are often treated as "extras," a supplemental enrichment activity. This program breaks through these and a host of other myths.

Puppetools' approach to human communication via puppets is new. It works with a medium familiar to every teacher: folded construction paper and cut shapes. The program aims to empower teachers to use puppets as casually as they use books. It translates the magical ancient art into a compelling

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communications experience for teachers.

Puppetools takes a fresh look at a tool long considered a supplemental enrichment activity. Those who have held puppetry as an asset to instruction but have wished for a more practical approach will find it in Puppetools. As the name suggests, Puppetools is all about what happens through puppets. The value of this course will be found in the transformation it brings to the classroom and to the performance of teachers unfamiliar with the medium.

Teachers will come away speaking a new language--a visual, handheld language of symbols and ideas--a language used to create dynamic learning experiences--a paper language that empowers teachers to reach children with a responsiveness that only puppets can elicit.

Speaking this language empowers teachers to grasp the vital role of play as a learning behavior. It will help teachers bring the curriculum to life, while enhancing instructional media already in use. A playful, childlike quality of mind underlies the ability to envision and communicate ideas.

Harnessing the energy of communicative play, Puppetools offers both a handle on applied creativity and inroads into the imagination, into the emerging science of learning, into the curriculum, and into the inquisitive self.

Syllabus

8 week Course/ Log-on 3 X Week

Week 1. Orientation

- Unit 1. Welcome and Introductions
- Unit 2. Technical Orientation (readings and practicum)
- Unit 3. Tour the Puppetools Website

Week 2. Construction

- Unit 4. The Videotape as Resource
- Unit 5. Construction
- Readings:

Week 3. Communication

- Unit 6. Communicative play, exercises, techniques.
- Unit 7. Characterization: giving your puppet educational character & purpose
- Readings

Week 4. Practicum I/ Show & Tell

- Students take puppets they have made into their work settings
- The experiences and interactions are recorded in journals
- Guidelines for conducting an in-class workshop

Week 5. Practicum II/ Puppet Workshop

- Plan to conduct your workshop; construct 2 or 3 demo models
- Conduct the workshop

Week 6. Practicum III

- Note: At this point in the course, students will participate in 2 out of the 3 practicums below; one to be completed in Week 6, the second choice in Week 7. Elements of all practicums may be explored.)

Week 7. Practicum IV

Practicum III/ Storytelling

Practicum IV/ Curriculum Link

Practicum V/ Problem-Solving

Week 8. Puppet Theory

- Unit 8. The Science of Learning
- Readings: "Why Children Talk to Puppets"; "Puppet Language & Communicative Play." Review

Requirements

Students will experiment with a variety of formats for using puppets, to be constructed. They will conduct scenarios in their own classrooms or work settings. They will record observations and experiences in a journal to be maintained throughout the course. The grade will be based on the student's on-line participation (30%), the quality of puppet applications developed (30%), and the log based upon the ongoing use of puppets in the student's own classroom (30%). Student response to readings, and new material or insights brought to the course (10%).

Materials

Students will require construction paper, some quality art papers, glue-stic, and scissors. A \$30.00 materials fee covers the cost for a special course videotape. Required and optional readings will be made available online via the Puppetools Website.

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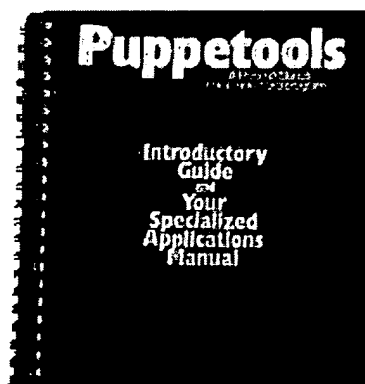
Product Catalogue

Note: The catalogue has been partitioned to speed loading time.

Please Note: Simply make a copy of this catalogue and circle the items you wish to order. *You may use the Text Only version for printing convenience.* We are not yet set up for credit card purchases. You may fax your order or send a purchase order. See How To Order

Go immediately to these catalogue items: Puppetools Guide / Introductory Videotape / Pattern Theme-Paks / Our Earth: The Water Planet / Puppet Stories / Make & Take Puppet Kits

Puppetools: Introductory Guide & Applications Manual \$24.95



Our one-of-a-kind working text balances puppet theory & teaching practice. Written for teachers (and others working with children) who can benefit from creative learning models and from encouragement to try something new. Serves as a comprehensive reference for leaders who want puppets used more actively in instruction and special programs. Exercises, anecdotes and models lead the new user into a new world of applied creativity and communication. Includes patterns, photos, and illustrations with references to 80 puppets. ISBN: 0-9609506-1-3, 8" X 11", indexed, and spiral bound, 157 pp.

Introductory Video: \$30.00

This informally produced video serves as an excellent introduction to Paper Talker® Puppet construction with sequences from children's and adult workshops. 30 min. Many more videos to come on subjects such as training, construction, classroom techniques, and curriculum development. Supplements the Puppetools Introductory Guide and the Pattern Theme-Paks.

Puppet Pattern Theme-Paks: \$9.95ea.



Coming:

Computer Reference on Diskette, including hundreds of teacher puppet ideas

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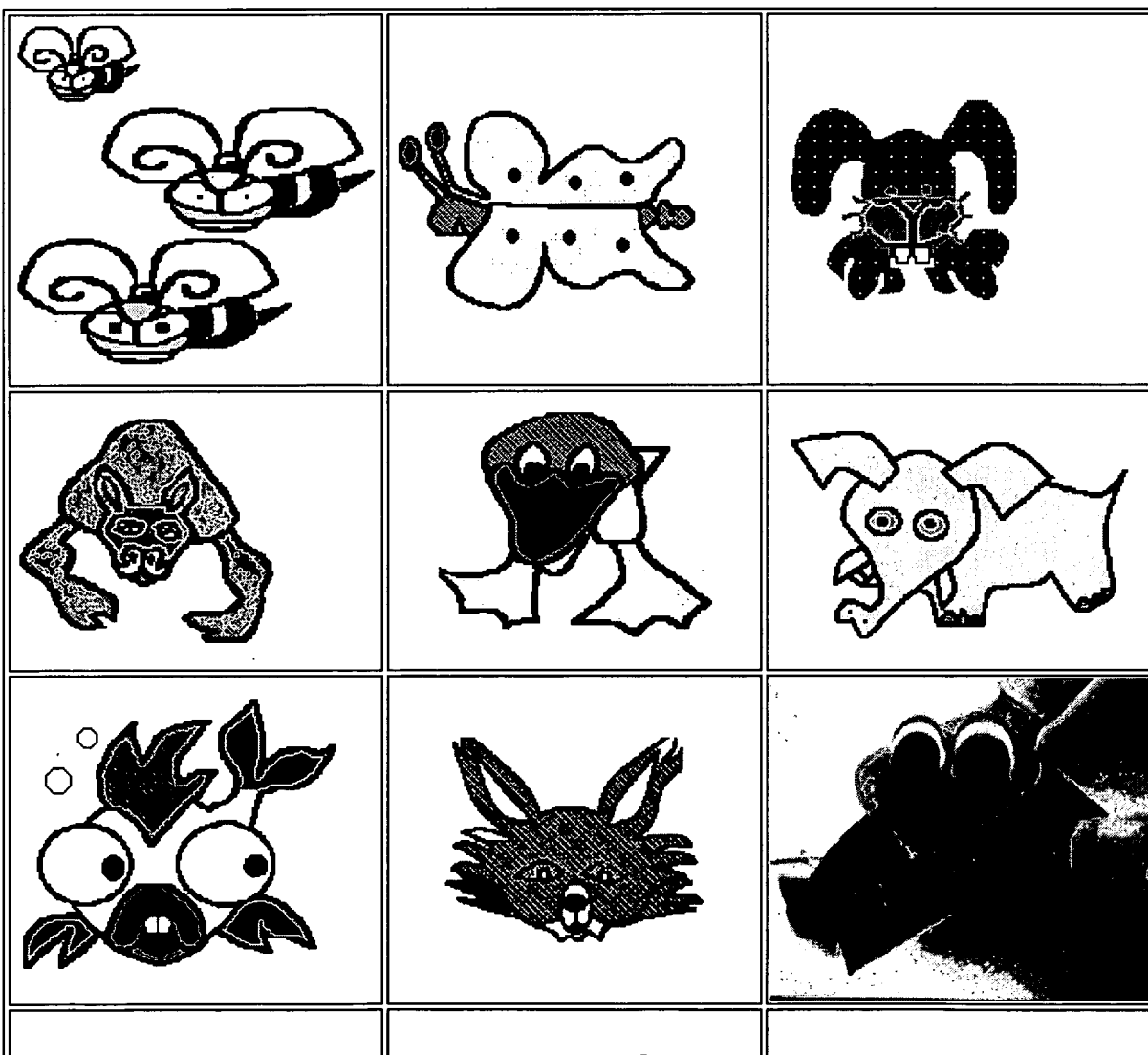


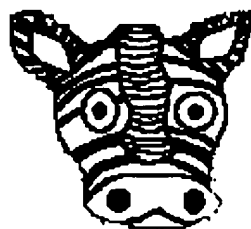
Pattern Puppets

A Word About The Patterns

Patterns are excellent for getting started. They provide structure with plenty of room for individual variation. Whether child or adult, seeing how shapes become puppet forms provides a solid base for creativity and self-confidence. We acknowledge that in many instances "creative self-esteem" is a factor. While the open-ended, creative approach is optimal, many use our patterns as an effective stepping stone toward that end. We recommend the use of our introductory [video](#) as a good way to make best use of the patterns.

Sample Showcase





ZEBRA

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FOR IMMEDIATE RELEASE

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Photo Opportunity

Richmond, Virginia, Spring, 1997. What do puppets and computers have in common? This and other questions about high-touch and high-tech dynamics are explored in Puppetools' award-winning website at <http://www.puppetools.com>

"Puppets are natural tool for the information superhighway--especially Puppetools," says founder Jeffrey Peyton.

The purpose of the Puppetools website is to educate people about a "learning language" that dramatically transforms life in the classroom.

Unlike Sesame Street which, despite its popularity, was never adopted as a universal teaching practice, Puppetools delivers a symbolic language to the education arena in which teachers discover the power of the hand puppet--as easy to pick up as a piece of paper. Puppetools is not image or character specific; instead, it functions like a utility and acts like a language.

With Puppetools the puppet's communicative, improvisational quality takes on the character of visual media and language. According to Peyton, a puppet is "a handheld idea, a part of speech in a limitless interactive language of symbols and concepts."

"Puppetools is not about puppets. It's about using interactive, symbolic forms to facilitate higher level thinking and group dynamics. It's all about brain science and behavior," says Peyton.

The Puppetools formula composed of communicative play energy, paper, and on-line delivery successfully transforms classroom communication and experience. The result is a "Windows-like" operating system for classroom communication and idea management which alters key elements of classroom behavior, language and communication.

A Puppetools teacher training program is offered on-line by The New School for Social Research in New York City. The course demonstrates how computers can successfully deliver and facilitate creativity and human dynamics in classrooms at all levels.

END

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Fact Sheet & Interview Material

Q: Puppetools is a groundbreaking approach to puppets--puppets as media and tools for teaching and communication. What makes Puppetools new? And why is a new approach to puppets worthy of attention?

A: Because, apart from the passive realm of television, puppets exert a powerful influence in children. The hand puppet is, arguably, one of the most powerful *unplugged* media impacting children of all ages--and cultures. A process that taps and harnesses the power of this medium and makes its practical to use and adapt by teachers and established forms of media and culture carriers (such as books and computers) is revolutionary in both practice and implication.

Puppetools has demonstrated that adults and children of all ages will talk and respond to simple paper puppets in group learning situations. Puppetools has been used to teach college-level foreign language. Sixth-Graders will talk to puppets and junior-high school students enjoy the design aspect as well as puppet interaction and repartee.

Q: Why do students of all ages respond in this way?

A: Puppets strike the play chord, a universal drive that calls upon a full integration of brain resources.

Q: Does it matter whether children watching the puppet can see the teacher making the puppet talk?

A: The process is akin to picking up a telephone. The response is predictable, unconditional, and involuntary. Instead of being critical, students engage with the adult's willingness to communicate in way that they understand intuitively and experience as nonthreatening.

Q: Puppetools is a paper approach. The puppets can be made in a matter of minutes. Why paper?

A: Paper + Puppets = A Miracle Media. If the puppet medium can merge with a key material of classroom culture like paper, the goal of mainstreaming puppetry as a language and an operating system is reachable.

Q: Puppetools has acquired three utility patents. Why patent a puppet?

A: The patents are for devices called Publishing Utilities. In addition to making it possible for ideas and symbols of all kinds to quickly become puppets, the utilities enable storybook illustrations and images like George Washington's face on the dollar bill to assume a communication role set free from their flat, page-bound dimension.

According to Peyton's definition of the term, "a puppet is a handheld idea." Peyton's definition and inventions change the popular view of puppetry as an art form into a true mass media.

Puppets and Behavior

The hand puppet is an ancient artifact with prehistorical roots in fertility symbols and dolls. But it is also a unique form of human behavior. The "puppet dynamic" is evolutionary in nature. As evolution has produced classes of living forms from the bottom up by gradual selective processes over eons of time, so has it produced unique behavioral niches associated with specific forms. Play, for example, is unique to

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mammals. In this view, human communicative play behavior, in which a handheld, lifelike form interacts and elicits a response, represents non-learned activity that externally mirrors and facilitates the inner mental processes leading to the development of consciousness.

According to Peyton, the puppet process calls upon and synthesizes a variety of mind dynamics. As a form of nonverbal display language (prosematic communication), the hand puppet is a kind of adaptation, a plumage, an appendage whose role is to facilitate play behavior, nurturing disposition, and communicative activity. Puppet behavior may be definable as a species-specific form of behavior that catalyses, induces, and directs (as in tropistic behavior) levels of consciousness. As a bio-media form, the puppet extends, amplifies, exaggerates, facilitates, and replicates neurobehavioral and physiological functions outlined in recently advanced theories of the mind process and development.

Puppet Behavior may constitute a natural Recognition System in that it simulates Norbert Wiener's (cybernetics) Law of Communication, which states that for communication (inner or outer) to occur there must be "behaving entities." As a self-connected human symbol, the puppet-artifact may constitute a living, high-touch reflection that exists between brain physiology and psychology.

At a recent meeting of the National Academy of Science, 'Why Dogs Bark?' was a subject of interest. Recently, a Discovery Channel program focused on how Moose use their antlers to communicate. Peyton's work suggests that educators and scientists should study 'Why children respond unconditionally to puppets?' because it is a question which has broad implications for human learning.

According to Jeffrey Peyton, an inventor and educational reformer whose innovative ideas have been published in a variety of professional education journals, "If you want to change the way people teach and behave with children, then you have to use tools that destabilize the old habits while having a dramatic impact on critical areas of classroom life: language, behavior, and communication." Imagine all the teachers in one school feeling skilled enough to use puppets as easily as chalk and workbooks--that's what reinventing this medium is all about.

If puppets are usually viewed as a form of entertainment, then what is Puppetools?

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Why Children Talk to Puppets

"Our society is desperately in need of individuals who are able to look at the old and familiar in startling new ways," wrote Ernest L. Boyer, President of the Carnegie Foundation for the Advancement of Teaching. Educational reformer and theorist, Jeffrey L. Peyton has discovered untapped elements in a familiar concept. He is the architect of Puppetools, a learning language based on the need to communicate through play.

Puppetools is an invention akin to Fortran, the language that made computers programmable. Puppetools is not theater; it is a visual language that works on the "high touch" end of the communication spectrum—from preschool to college foreign language classes.

Puppetools merges the seemingly disparate elements of paper and play behavior into "a language of hand held symbols and concepts." Puppetools transforms the dynamism puppetry into a practical model of interactive play language.

Recent research on questions relating to language suggest an emerging focus on the importance of communicative play. "Vigotsky's Theory: The Importance of Make-Believe Play," (Young Children, November 1994), by Laura E. Berk, targets a critical link between play and learning in adult-child communication. "Why Children Talk to Themselves," also by Berk, (Scientific American, November, 1994), explores the phenomenon of private speech behavior in children.

By contrast, a paper entitled "Why Dogs Bark," presented at a recent American Association for the Advancement of Science annual meeting, suggests that the question raised here, "Why Children Talk to Puppets," offers a reasonable basis for research and broad interest given the need for education reform and brain science applications.

Peyton's inventions and theory are based on the observation that children respond unconditionally to puppets, that the puppet archetype is evolutionary. It is a form of behavior unique to human play that mirrors and facilitates the growth of consciousness inherent in brain process. The archetypal hand puppet induces human play and audio-vocal and psycho-social interaction. It synthesizes symbolic thought and visualization, emotion, humor, and nurturance.

The importance of play was recognized by the ancients. Heraclitus wrote, "Man is most nearly himself when he achieves the seriousness of a child at play." As a biological birthright of learning in mammals, play is recognized as a key element in early childhood education. Research on play behavior relating to early childhood education fills the shelves of bookstores and academic libraries.

Nevertheless, as Berk discloses, "a search of the literature reveals no research on the subject of adult-child play relationships." According to Paul D. MacLean, Senior Research Scientist, Department of Neurophysiology, NIH, the subject of play as a form of behavior has proved similarly elusive in the field of brain science.

In view of the prominence of play among mammals and its civilizing influence in human evolution, it is



curious that it has received so little attention in neurobehavioral research. In one handbook of experimental psychology, for example, the subject of play is dealt with in less than a page, and in a three-volume handbook of neurophysiology, there is no reference to play.

Peyton establishes a program for research by casting a light on specific neurological conditions leading to human play, communication and learning. Supported by current research in brain science, Peyton's puppet language is a principle-centered teaching model with important ramifications for education leaders, and is virtually cost-free. Communicative play language has a direct role in the education and socialization of children in mass society. It offers a way to adopt communicative play as a governing principle of human learning. And given the exploding role of high technology and problem solving with computers, it offers a more visual approach to thinking that will be required.

Albert Einstein observed: "The significant problems we face cannot be solved at the same level of thinking we were at when we created them." If a new level of thinking and communicating is to be achieved for education, what will it look like--and what tools will it use?

Could this new level of thinking help struggling school systems create a fundamental change in the way children learn?

Is it possible for a host of educational challenges to be solved with a comprehensive vision in the same way Einstein attempted to unify our understanding of the physical world with a single theory?

Roman philosopher Lucius Annaeus Seneca may have left a trail marker in answer to these questions when he wrote:

"True wisdom consists of not departing from Nature but in molding our conduct according to her laws and model."

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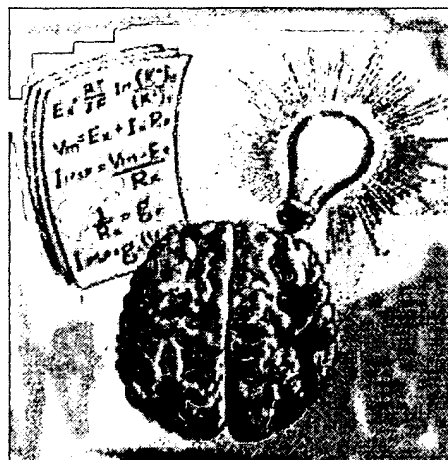
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Puppetools

• The Science of Learning



Puppet Language: The Science of Communicative Play

Index for this file

Hypothesis/ Play and Creativity / Nonlinear Brain Science / Descriptive Symmetry /Dynamic Symmetry / Conclusion

Hypothesis: *The puppet-dynamic is evolutionary behavior unique to human play that attracts, harnesses, and mirrors the forces of consciousness inherent in brain process. In this little thing we prop up by hand outside the self, the workings of the mind become manifest in a symbolic language, a language that children experience as larger-than-life, a language they speak instinctively.*

The archetypal hand puppet is a physical form of internal mental states. It induces human play, audio-vocal and psycho-social communication. It synthesizes symbolic thought and visualization, emotion, humor, and nurturance.

Hand-held representations of clouds, planets, seeds, raindrops, gears, ears, germs and flowers are but a few isolated symbolic life forms part of an infinite symbolic and communicative species. They may be described as morphic fields of information capable of fostering evolutionary changes in educational behavior, and appear to possess the physical forms of automata that rely on the mechanisms used by the real brain. Like the flowering plants that once spread across a monotone green earth, these forms give rise to a multidimensional, integrated, ever-unfolding landscape for learning and discovery—the way the brain intended.

Play and Laughter

Play and laughter are elusive, subjective forms of behavior that infiltrate human communication. Communicative play, which combines elements of play and laughter, punctuates and facilitates thought and communication--but does not impede it. There is much research on the vocalization of animals, such

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as bird calls and animal calls, but related behavior of homo sapiens is largely overlooked. Laughter is both a universal private and social act.

According to Robert R. Provine, professor of neurobiology and psychology at the University of Maryland, laughter provides a foothold on the neurobiology of behavior. "It is a species-typical behavior common to human beings that gives us the opportunity to go back and forth between the neural circuitry and higher social act," says Provine.

Play and laughter appear to be different branches of behavior that lead to a common source. Both are private and social phenomena that are spontaneous, infectious, and indicative of some deeper neurological principles. Similarly, play behavior has roots that extend deeper providing the emotional trigger or tickle required for the typical explosion we take for granted as a "laugh." Play is a mammalian birthright leading to family life and education. Play has been identified as a critical factor in socialization and child development. It is also the mental soil upon which great inventors and scientists establish their work. In an evolutionary sense, play is wellspring of learning.

Play Overlooked

In the field of brain science and the study of behavior, play has been ignored. Paul D. MacLean, Senior Research Scientist in the Department of Neurophysiology at the National Institutes of Health, writes:

In view of the prominence of play among mammals and its civilizing influence in human evolution, it is curious that it has received so little attention in neurobehavioral research. In one handbook of experimental psychology, for example, the subject of play is dealt with in less than a page, and in a three-volume handbook of neurophysiology, there is no reference to play.

In the field of education, the subject of play fills bookshelves. Nevertheless, an article about play (Young Children, November, '94), a publication of the National Association for the Education of Young Children, Research Editor, Laura E. Berk, reveals an extraordinary educational blind spot: "a search of the literature reveals no studies of teachers' participation in young children's play."

According to Berk, in typical early childhood education settings play is not recognized as a primary basis in communication between adults and children and is used haphazardly depending on the individuals involved. Berk's disclosure suggests that play behavior between teachers and children is not viewed as an important subject for research. As you move up the institutional classroom ladder, play behavior is almost extinct.

Understanding play and its appropriate application will allow educators to make a significant instructional shift from the overreliance on words for communication into natural, biological drives such as play. If play can be defined as an evolutionary invention, there is, interestingly, a related a behavioral expression of play and communication unique to the human realm. This refers to play media, or what are commonly called "puppets."

Puppets: Communicative Play Language

In a popular vein, puppets are widely recognized for their beneficial influence on learning and social development. They exert a powerful influence on children of all ages. Puppet language is unique in its ability to help teachers and children learn from one another, grow, relate openly, to be self-confident and self-expressive. Speaking this language, a teacher can personally transform common learning barriers--oppositional behavior, negative moods, defensive attitudes--into a windfall of leaning benefits and

surprises. Children become more responsive and motivated. Teachers find themselves suddenly having fun, unable to wait for the next day. Teachers who keep themselves and their emotions at arm's distance in the classroom are suddenly enthralled by the impact of puppets and their children's response to them. "This has been one of the most enjoyable first few weeks of school I can remember, wrote one teacher who had recently discovered the medium. Puppets call up in teachers and children something spiritual and vital to a learning process struggling to rise above itself.

Stripped of its theatrical trappings, the hand puppet is a part of speech in a limitless learning language based on the need to communicate through play. Simple puppets made of paper are hand held ideas, a powerful, cost-free communication resource. Re-cast in this way, puppet language is akin to Fortran, the language that made computers programmable; puppet language works at the "high touch" end of the communication spectrum, making brain science "programmable" for the classroom from preschool to college foreign language classes. The elements of paper and play behavior constitute "a language of hand held symbols and concepts." The dynamism of puppetry may be harnessed and mainstreamed as a practical model of interactive play language.

That puppets appear to do this almost magically--teachers often observe behavioral patterns otherwise unnoticed--is actually a function of natural forces at work. Puppet language operates according to principles of biology and brain science.

Puppet Behavior & Brain Science

When used as applied behavior--that is, when they're not used as skills in the negative or manipulative sense--puppets represent a form of spontaneous, species typical behavior that induces predictable individual and group responses similar to behavior in other life forms with which we share common neurological building blocks. Like laughter, puppet behavior can be understood, quite literally, as a tool that provides insight into learning behavior. Puppets are at once a scientific looking glass and a mirror complete with a handle by which to gain an objective sense of our subjective selves.

Since linking puppets with brain science is sure to induce waves of contempt and ripples of curled lips, there are recent articles and studies which provide a context for serious consideration of puppets as valid subject of brain science. "Why Children Talk to Themselves," by Laura E. Berk, (Scientific American, November, 1994), explores the phenomenon of private speech of children. Berk's "Vigotsky's Theory: The Importance of Make-Believe Play," Young Children, November 1994, targets a critical link between play and learning in communication between adults and children that appears to be overlooked by educational researchers. By contrast, a paper entitled "Why Dogs Bark," presented at the 1993 American Association for the Advancement of Science annual meeting, suggests that the question raised here, "Why Children Talk to Puppets," offers a reasonable basis for research and broad interest given the need for education reform and brain science applications.

The concept of the left and right brains is well established. The concept of a Gut Brain (the brain that gives your stomach "butterflies") has been offered. "The Triune Brain," introduced by Dr. Paul MacLean, Senior Research Scientist in the Department of Neurophysiology at the National Institutes of Health, Bethesda, Maryland, establishes the biological and social relationship between play and learning in his book, *The Triune Brain in Evolution* (Plenum Press, 1990). His study of brain evolution explains the emergence of nonverbal behavior, emotional and rational brain processes. MacLean views play as a product of evolution in mammals with its primary role in human socialization and learning.

The idea that puppet behavior could offer a practical handle on aspects of brain science was first presented by the author at a meeting of the Greater Richmond, Virginia Council of Science Educators, in

March, 1995. It establishes the scientific basis for the "puppet dynamic" as an evolutionary fact of human behavior.

Brain science is important to the average classroom teacher. Exploring the deeper architecture and expressions of brain formation and function (and the behavior linked to these) will shed new light on how children are programmed to learn. Brain Science takes educators into the last and highest level expertise in education: to master the game, adults must be willing to engage in appropriate forms of communicative and conceptual play.

The brain has evolved as an incredibly complex selection and recognition instrument that works according to identifiable patterns and plans. Once educators begin to grasp its essential nature, teaching can begin to work in synch with natural principles.

A Handle on Brain Science

Three basic lessons educators can learn from brain science are as follows:

1. The brain is a selection instrument. It seeks new information on the basis of recognition--not instruction--and play. Play process provides ingredients that foster a healthy quality of mind: openness, spontaneity, unpredictability--all-important operating characteristics of the brain.
- 2.
3. The brain's primary mode of communication is nonverbal and visual.
4. Play is an evolutionary invention linked to speech, nurturing, and learning in mammals and can be harnessed to drive the learning process and used to lead us into a greater understanding of our intelligence.

Play: The Taproot of Learning

MacLean's research includes an analysis of reptilian behavior and reveals 25 special forms of basic behavior that are also found in mammals. Those conspicuously lacking--nursing, maternal, audiovocal, and play--belong to mammals.

MacLean's research identifies and organizes brain mechanisms underlying nonverbal behavior forms, paleopsychic process and paleomentation, the bedrock brain program established by nature; the behavioral and neurobehavioral aspects of which are shared between animals and human beings. For example, the behavior known as "display" is common innate behavior in animals as diverse as lizards and monkeys, and is broadly involved in the organized expression of species typical, prosematic behavior of a ritualistic nature.

MacLean notes that primitive man may have learned that by covering himself he reduced the unpleasant social tensions arising from the archaic impulse to display and that this, rather than modesty, led to the civilized influence of clothing. It could be argued that the act of covering up the hand when slipping on a puppet has a similar effect of lowering tension in a class of children.

Thus wrapped in the temporal puppet dynamic may be found the physical expression of neurological and evolutionary events foundational to human learning.

In MacLean's outline of specific behaviors related to the older, reptilian brain formation, aspects of the



puppet dynamic can be observed and identified in context of MacLean's criteria. Its effects are described in the journals of teachers who record its impact for the first time. "I can hardly believe that a paper puppet can be so magical." "The children were mesmerized."

What is mistaken for the "magic" in puppets may simply be the visceral workings of the brain's deeper nature in response to vocalization, movement, and visual information associated with a powerful species-typical behavior.

The Biological Foundations of Play

TROPISTIC BEHAVIOR

Tropistic behavior refers to the positive or negative response of an animal to partial or complete representations, whether alive or inanimate. "Tropo:" "a turning" as a plant towards sunlight/ positive tropism. Tropism also signifies an inborn or innate inclination. Tropistic behavior includes behavior ethologists attribute to "innate releasing mechanisms." The OED uses an example of tropistic behavior defined and driven by play: "Gestures made by cock birds to attract the hens." Naturalist Conrad Lorenz referred to the unlearned response of animals to certain "sign stimuli" as innate motion patterns, recalling the actions of a cat or kitten at play. According to MacLean, ethological writing describes the stickleback fish as a favorite subject for illustrating a fixed action pattern. Red color on the belly of a dummy is sufficient for eliciting the fighting response of an adult male stickleback. More intense response is obtained by placing the dummy in a non vertical position.

In humans there is the infant's Tropistic Response to features on the face, first smiling in response to 2 or 3 round circles. Students of human ethology draw upon illustrations from the visual and performing arts, commercial advertising. Tropistic response can be found in patients' reports of what they see in inkblots. The puppet is a form of "sign stimuli" that elicits a positive or negative response. The individual or group response to a puppet and the child's assemblage of features on a puppet might suggest a form of self-identification, nonverbal, self-similar response.

A puppet has of course been colloquially described as a "dummy." Color, movement, exaggeration are all qualities in a hand puppet that capture attention when used with a group of children. When children attach themselves to a puppet, the dynamics of imprinting or identification are at work.

"Although I was in experienced using the puppet with the whole class, I found it quite enjoyable and was amazed at the complete attention of the class." Another teacher: "They were so happy to see "Who." It was wonderful to watch them verbalize and converse. Their attention was fantastic: with no disruptive problems, they took turns, and needed no reminding to stay on task. They really worked harder and thought of very appropriate questions."

Observations of adults who are always with children report sudden, significant changes in behavior as a result of introducing their puppets. Their adult perceptions of the children are altered, as well. "I've seen a side of my students I will never forget."

Repetitious Behavior

Repetitious behavior is common to both lizards and humans. Ritual is an example of repetitious behavior: weekly church services, ritual, refrains, repetitive visual messages, such as a lighthouse beam, or participatory exclamations. Human examples that reflect repetition brain behavior include reenactment: a repeated performance in which a number of activities are meaningfully related (Eg. a

learning drill or story reading which can be integrated or detached so that there is no meaning as when the eyes move over the page of book with no active input). A cardinal rule of the Reenactment Game: The greatest number of displays (charades, body movements) eventually wins out. Displays are comparable to exclamation points. MacLean cites the telephone that gets attention because of the number rather than the loudness of the rings. TV and radio advertisers apply this repetition strategy ad nauseam. Rote activity in a learning drill is reinforced and punctuated to create smiles and increase heart rates in the group. Another technique employs the puppet to signal a transition in activities.

DECEPTIVE BEHAVIOR

The snapping turtle's tongue is designed to fool fish into mistaking it for a worm. Even though the turtle is unaware of his tongue's power, it is a tool built into his nature. Similar illusion and deceptive behavior are at work in a fishing lure which may be viewed as a combined rod puppet and marionette. MacLean describes a dark spot on a green anolis lizard while performing a series of challenge displays makes the eye appear larger in size. The hand puppet represents hiding or filtering essential for communication and at the same time overcoming resistance. With its exaggerated features, movement, color, and vocalizations, the hand puppet functions for the teacher on the hand as irresistible, eye-catching larger-than-life bait that is alive and kicking. "My purpose," writes one teacher, "was to develop eye-contact and to encourage the use of the 'good morning' greeting."

"Students of behavior," writes MacLean, "might contend that it requires more guile and ruse to avoid failure than to achieve success. The capacity for patience, persistence, endurance is crucial," suggesting that the genetic mental chemistry for survival is an important, but overlooked ingredient in human education; not just imparting knowledge and testing for its retention, but calling upon the mental resources crucial to individual strengths and resources concerned primarily with survival instincts.

ISOPRAXIC BEHAVIOR

Left to themselves, animals engage not only in species typical pair or group activity of the same kind, but may also adapt some novel practices of one of their group. Isopraxic Behavior is observable in most forms of communication involved in self-preservation and preservation of the species. Isopraxic Behavior means performing anything in a like manner. Doing something the same way. Not imitated. Not learned. In circular language one might define a species as a group of animals that had acquired the perfect ability to imitate themselves.

Human activity with puppets is a form of self-imitation, self-mimicry, self-reflection. A puppet on the end of an adult's hand that asks a question will generate an unconditional response from the group. Increased levels of interest, energy, communication, and identification with the moving object.

Just as isopraxic behavior is involved in conspecific (group) recognition, so does it serve in the opposite sense to promote species isolation, or behavior which makes it distinct or different, setting it apart from other species. The simple act of human mimicry represented in the existence of the puppet itself propped, as it were, like a mirror of consciousness, is a distinct form of behavior. When use of a puppet is involved, the group tends to identify, follow and communicate with the symbol. As a species typical display greeting, puppets exert a strong effect on children.

According to MacLean, it is the neural network to which the cells belong that accounts for the selective and identifying responses. He cites the example of the squirrel monkey in which some cells in the limbic cortex and neocortex will respond only to species typical vocalizations of another squirrel monkey. The reflection of a single eye may be sufficient to elicit the full greeting display in the squirrel monkey. The

presentation of partial representations with respect to other sensory systems might activate the cells within neural networks "genetically tuned" to particular partial representations. If children are attracted to puppets, isopraxic behavior is partly the reason.

THE LIMBIC SYSTEM

Paul MacLean introduced the term "Limbic System" in 1952. The Limbic System has no representation in the reptilian brain. MacLean tells us that "the history of the evolution of the limbic system is the history of the evolution of mammals. It is our history, the driving force behind human development; While the history of the evolution of mammals is the history of the evolution of the family."

MacLean tells us that play represents one of the three cardinal forms of behavior that characterized the evolutionary transition from reptiles to mammals. He cites no persuasive evidence that reptiles play. Hence, it might be argued that individual play, and most particularly long bouts of social play, represents a uniquely mammalian trait. MacLean suggests originally that play may have served to promote harmony in the nest, and then later on affiliation of members in a group. His experimental findings that were described suggest that the function of play is identified with the most recently evolved division of the limbic system.

The Limbic System is divided into 3 parts: 2 older olfactory sections involve oral and genital functions necessary for self-preservation and procreation. The third has no counterpart in reptiles and involves parental care, audiovocal communication, and play. The fact that parenting, human vocalization, and play are together a genetically inherited human brain program suggests why puppets, which characterize two of the three components, exert such a strong influence on children.

The hand puppet dynamic is behavior rooted and reflected in the workings of the emotive brain in the limbic system. Teachers' reports and observations suggest that use of a hand puppet allows them to guide the behavior and the emotions of their classrooms.

The puppet is a communication device--a mental satellite that not only mirrors--but actually engages the limbic brain's capacity to relate to both the inner and outer world; a microphone, a technical communication device which amplifies and modulates qualities of the limbic system. The satellite's primary function is to beam emotive information back and forth. Norbert Wiener (cybernetics) said that communication must involve behaving entities. Back and forth interaction within the circuits between the inner and outer world produces excitation, a state of experience necessary for learning, retention, memory, and identity. (MacLean)

The Limbic System derives information in terms of emotional feelings that guide behavior required for self-preservation and preservation of the species. The Limbic System is involved in emotional behavior or in the subjective experience of emotion. The term Limbic refers to the creation of what we call the "realm of human experience" and the expression of emotion.

Limbic refers to the generation of free floating, affective feelings conveying a sense of time, of what is real, true, and important. Limbic brain activity is essential for interoceptive and exteroceptive (give & take) systems required for a sense of personal identity, memory of ongoing experience and dreaming.

If the brain were likened to a detecting, amplifying, analyzing device, the limbic cortex is designed to amplify or lower the intensity of feelings to guide the behavior of self-preservation and preservation of the species. The teacher, for example, who uses a puppet with an eleven-year-old-blind student does not benefit from the puppet's visual element. Instead, the relationship between teacher and student moves,



by virtue of the puppet as a third party, a dynamic driven by emotions. It's a place not unlike computer memory, which speeds specific functions and communications. The puppet's net effect lowers resistance to learning, adds a feeling of warmth and security essential to receptivity, and fosters personal growth and expressiveness.

NEOMAMMALIAN FORMATION (the neocortex and thalamic structures; the outer brain)

Compared to the limbic cortex, MacLean describes the neocortex as "an expanding numerator, ballooning out in evolution and reaching its greatest proportions in the human brain." The neocortex has extensive roots in visual, auditory, and somatic systems and appears to be primarily oriented to the external world. The neocortex has progressive capacity for problem-solving, learning, and memory of details.

The neocortex is responsible for linguistic translation and communication of subjective state accompanying various forms of mentation. Education's primary focus on the acquisition of facts and knowledge, and the testing to verify the retention of that knowledge, is well intentioned. But Berk's report on the dearth of playfulness in communication in teachers suggests that current training and orientation of teachers, indeed the vision of education leadership, is focused myopically on the neocortical world. The neocortex governs verbal communication and is able to promote the procreation and preservation of ideas (pure information; no mass or energy). The neocortex not only affects the transmission of culture, but also affects the course of biological evolution. The neocortex may appear to be the leader, but following the leader in this case is like following the proverbial horse to the water: without addressing the requirements of the inner brain formations, the horse is not likely to drink.

A conclusion that may be drawn from MacLean's organization of the brain is that by harnessing brain energy generated by the inner and older brain formations, there are benefits to be gained from the biological forces which naturally drive and propel human learning. By engaging the resources of the limbic system, learning activity can be made to work according to its natural principles. To strike a household analogy: if you run a typical kitchen appliance you only need 110 amp service; if you want to run air conditioning you need a 220 hook up. If more electrical service (brain activity in children) is called for, then tools which draw upon the brain's full power must be applied.

MacLean's research considers the possible role of the frontal lobes in the regulation of play and laughter and in the intellectual, creative process as it is influenced by wit and humor.

MacLean tells us that there is little experimental information bearing on the role of the frontal cortex in play. However, lobectomies have resulted in cessation of play. Play behavior can be erased by lesions. If play behavior is not regularly engaged, it disappears. If play can be erased from the brain, then it may be advanced that the fertile ground upon which educational processes grow may be erased as well. If the quality of play is absent from learning activity, it is like trying to grow plants without the essential nutrients that foster life.

PLAY AND CREATIVITY

MacLean provides numerous examples of how play on words, punning, and wit have contributed to creative thought. In literature and theater, one hardly needs to look beyond Shakespeare. He points out that Friedrich Schiller, poet and friend of Goethe, popularized the game metaphor at the end of the 18th century, "tracing the human urge to create to the *spieltraub*, the play impulse. MacLean refers to O.B. Hardison who described the play of modern science as "serious but that its games are so exhilarating, and the rules often so strange, that the play becomes overtly playful. The playfulness spills over into

mathematical and logical puzzles and into language that is intentionally paradoxical, whimsical, and absurd."

Hardison refers to the origins of such words as quarks and gluons. Then turning to quite a different game, he refers to Mandelbrot's book *The Fractal Geometry of Nature* that offers picture after picture of breathtaking playfulness, commenting that part of the playfulness comes from its unpredictability.

For the interplay of such factors in science, art, and music, Thomas G. West's *In The Mind's Eye* provides abundant illustrations. Albert Einstein's assistant, Banesh Hoffman, once described the great scientist's quality of mind:

"Einstein's method, though based on a profound knowledge of physics was essentially aesthetic and intuitive. Watching him, and talking with him, I came to understand the nature of science in a way that I could not have possibly understood it merely from reading his writings or the writings of other great physicists or of philosophers and historians of science. Except for the fact that he was the greatest physicist since Newton, one might almost say that he was not so much as a scientist as an artist of science."

Recent studies on the brain (West 1991) indicate that brain development and evolution is based on spontaneous and unpredictable action otherwise known as play.

With the soaring of the world's population, MacLean asks us to consider the role of play in coping with crowding. The number of offspring in a mammalian family is limited by the number of nipples. It may be partially for this reason that the optimum number in mammalian social groups tends not to exceed 12. Play language offers a means by which to offset the adverse affects of full classrooms.

Whatever the reason, it would appear that, except for matters concerning family and language, the limbic cortex and the neocortex have few inborn programs for regulating behavior, and none in particular for coping with large numbers of individuals. In other words, it would appear that the adoption of a family way of life has made it awkward for most mammals to adapt to crowds. Even herd animals tend to group as families.

When human beings meet in large numbers, they seem to do best in situations in which they are feeding together, as at feasts and music festivals; or, taking advantage of the mammalian trait of play, are engaged in local, national, or international games, including the Olympics. But even in the case of international games, there appears to be a primitive, childlike fine line between enjoying fun at play and getting mad and fighting.

Puppet language makes it possible to exercise greater control over a large group using the forces of play and brain activity. Given the media's capacity for individualization, it is possible to shift its impact from group focus to individual focus, thereby maintaining the crucial involvement of the child. ...thus reducing student anonymity.

Teachers using puppets report that they are more inclined to joke and improvise with children either through their own puppet or the children's. This activity adds more of the adult's emotive touch and personality in communication.

NONLINEAR BRAIN SCIENCE

The above descriptions of the Puppet Dynamic linked to evolutionary brain science are based on what is



viewed as a Linear interpretation of science or a history of cause and effect. The linear explanation MacLean provides give us a glimpse of the inner workings and organization of deeper parts of brain function. But the fact that puppet behavior has evolved at all, that human beings readily engage in its mirroring, self-reflective behavior, opens a window on synchronicity. If suns sit host to planets, and planets sit host to moons, humans too have evolved a self-similar, self-revealing relationship with their inner world in the external Puppet Archetype: a form of behavior that combines pre-organized, recognition programs for play, communication, and learning.

Synchronicity (Peat 1989) is defined as "meaningful coincidence, the significant relationships and patterns of chance, the glimpse beyond conventional notions of time and causality into the immense patterns of nature, the underlying dance which connects all things, the mirror which is suspended between inner and outer universes. The joker in nature's pack of cards for they refuse to play by the rules."

Synchronicity takes place under the influence of acausal connections rather than by the familiar pushes and pulls of physics. Physicist Paul Kammerer, whose work supported was by Einstein, advanced argument for the existence of an underlying harmony or mosaic of nature. He referred to synchronicity as "the umbilical cord connecting thought, feelings, science. art with the womb of the universe that gave birth to them."

Like Kammerer, Carl Jung saw the workings of the brain rooted in the subcellar of consciousness. He referred to this realm as the collective unconscious as the realm that connects all human beings. Jung worked with physicist Wolfgang Pauli in a collaborative attempt to link psychology and physics.

What differentiates mere coincidence from synchronicity is its meaning. And it is the search for meaning, recognition, and connections that embodies the selective workings of the human brain. The special flavor of synchronicity lies in its being a unique and individual event and the manifestation of universal order. Wrapped within the temporal moment, a synchronicity exhibits its transcendental nature. It is in this relationship between transcendent and coincidental arrangement of mental and physical happenings that the synchronicity acquires its meaning. Reading the journal of teachers in which they record experiences with children as they use puppets to establish rapport and present ideas, one sees the degree of special meaning and intense feelings that are generated in both child and adult alike.

Personal experiences are almost synchronistic in their nature for they are always concerned with the way things happen together. Synchronicities have their origins in combinations of mental and physical that produce, for the experiencer, a strong sense of meaning.

The catalytic effect of puppet behavior between the person behaving, the brain processing, is synchronistic.

Peat paints the following picture of the scientist who stands outside the system as an impartial observer, able to predict all events according to deterministic laws and without disturbing events in any way.

"If Newton stood next to God on the day of creation," writes Peat, "he would have asked him for positions, masses, and velocities of the bodies He had created and could have predicted every subsequent event that was to occur in the entire universe."

Today the spectator is replaced by participator.

With the advent of quantum theory, physics and physicists are no longer separable. Quantum theory does not allow the event to be pinned down in any exact way. It is fundamental and absolute indeterminism lying at the most basic level of nature rendering Newtonian causality and determinism invalid--especially in matters that pertain to the mind.

In the first years of this century it was natural to speak of the elementary particles as being the building blocks of matter. Matter consisted of atoms made up of a tiny nucleus surrounded by a cloud of electrons. In the nucleus were protons and neutrons so that the whole of nature could be broken down into 3 elementary particles: electrons, protons, neutrons. Then a new generation of elementary particles was discovered as the internal structure of the nucleus was probed. Since then 100 elementary particles have been discovered, a veritable zoo of different particles. The latest discovery is the Top Quark. "Something is profoundly wobbly with this ultimate level of reality," writes Peat.

Before his death Werner Heisenberg the creator of quantum theory argued that what was truly fundamental in nature was not the particles themselves but the symmetries that lay beyond them. These fundamental symmetries could be thought of as archetypes of all matter and the ground of material existence the elementary particles themselves would be simply the material realization of these underlying symmetries.

Heisenberg argued that the ultimate reality is to be found not in electrons or protons, but in something that lies beyond them in abstract symmetries that manifest themselves in the material world. There are archetypal, clearly visible patterns of matter found in nature that we call symmetries.

Examples of symmetries include the fivefold sea star, the sixfold snowflake, the lateral fish, leaf, the human body, sea weed, the ram's horn, and the nautilus. Such objects possess a basic form in order which relate to the way they occupy and grow in space. Symmetry is ordering that arises through growth. Peat explains that spatial symmetry underlies a wide variety of different structures, including the brain.

Symmetry is a synchronicity which is a scientific term used to describe events in nature that are made up of more than a mere chance arrangement of disconnected parts into a pattern for it connects the individual with the global. It arises out of the operation of some deeper principle that binds the elements together into a fundamental pattern. Behavior in which human consciousness is symbolically materialized qualifies as a form of descriptive symmetry.

Descriptive Symmetry

Descriptive Symmetry refers to an ordering that arises in the mind. The mind creates subtle degrees of order and symmetry and projects these onto nature. Total order is perceived within the mind of the observer, and is an integral part of the constitution of material objects.

Dynamic Symmetry

Form and pattern emerge as a system grows and evolves and it is therefore possible for symmetries to be broken and then returned as a structure changes.

The hidden symmetry will therefore exert a formatting influence on each element as it behaves and enfolds. Symmetries of this nature could be said to have constitutive potential in that they govern the motion and evolution of each of the system's parts. When an explicit symmetry emerges out of a system it is not by chance but out of the very existence and essence of the system.

It is possible that the Archetypes and formative fields have a universal aspect, being formative fields of information that have an active role within the processes of matter, thought, and behavior. These symmetries have a formative role that is responsible for the exterior forms of nature. According to Peat, it is possible that archetypal symmetries of this nature could also manifest themselves in the internal structures of the mind.

The special flavor of synchronicity lies in its being a unique and individual event and the manifestation of universal order. Wrapped within the temporal moment, a synchronicity exhibits its transcendental nature. It is in this relationship between transcendent and coincidental arrangement of mental and physical happenings that the synchronicity acquires its meaning.

This is precisely the dynamic manifest in puppet behavior between the person behaving, the brain processing, and the catalytic effect of the puppet.

Personal experiences are almost synchronistic in their nature for they are always concerned with the way things happen together. Synchronicities have their origins in combinations of mental and physical that produce, for the experiencer, a strong sense of meaning.

Physicist David Bohm has advanced Idea that information can have an active or formative effect on matter. He calls this the Quantum Potential. Information acts like a radar signal received by ship at sea. The energy in the signal is minuscule compared to the energy that powers the ship yet the information in the signal has a formative effect upon the course of the ship. This is also a useful description of the puppet's impact on a child's mental growth and development.

Bohm's causal interpretation suggests that matter has orders that are closer to those of mind than to a simple mechanical order.

The everyday world of solid bodies that are unambiguously located in space and of sequences in a linear time are what he calls the explicate or unfolded order. Orders of matter, space, and time are all explicate manifestations of the underlying implicate order.

It is well known that the illusion of continuous movement is produced in a movie by the rapid succession of still images.

All human vision is built out of information gathered in the very short pauses between the rapid ballistic movements of the human eye as it scans an object. What is seen as solid, explicate form is in fact built out of an extremely rapid succession of snap shots taken by the eye of various parts of the object.

As this jumble of discrete images enters the nervous system, it is unfolded across the various regions of the visual cortex and folded back again. This indicates that the implicate order may be the natural order of the mind.

According to Bohm, Mind and matter are not separate and distinct substances but that like light and radio waves they are orders that lie within a common spectrum.

A two-way flow is established between the mental and material orders of nature. This flow is described at length in MacLean's descriptions of physical brain organization and structure. In fact this back and forth activity is the benchmark of human thought, and may be seen at work in the hand puppet dynamic.

A synchronicity can therefore be looked upon as a microcosm which reflects the dynamic of the

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macrocosm as it unfolds simultaneously into the mental and material aspects of a person's life

Conclusion

We know that the hand puppet represents one of the most powerful learning media and yet it is not generally used. In an effort to promote awareness of the medium I have pursued the notion that not only should it be seriously considered as a research subject; it is a medium intended for full unfolding of human potential, a humanizing medium that truly reinforces, validates, and promotes the best of human traits and capacities. Its operation and application represents a giant step away from reliance on strictly verbal communication and a shift into a visual, emotive, interactive way of communicating and problem-solving. In terms of its operating characteristics and the host of positive behaviors it induces, the hand puppet qualifies as a unique brain media and brain language.

One body of research will not in itself support this notion, but a reading of many of the current books about brain science and complexity reveal a pattern of insight and information that offer a developing picture of puppet behavior as a lens through which to observe and experience learning-- the way the brain intended.

Potential Impact of Puppetools on Reading Culture and Book Design.

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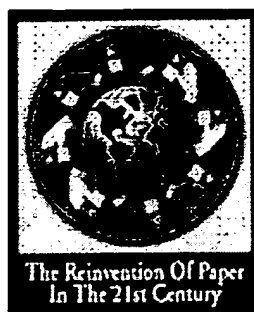
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Puppet Device (US Patent 4,880,404) Vinyl Puppet Device (US Patent 4,555,236) Paper

The Reinvention of Paper in the 21st Century

"The Marketplace of Ideas"

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Introduction

For more than twenty years Jeffrey L. Peyton has pursued education reform through his development of a revolutionary teaching method which employs paper puppets. Peyton's paper communication device and related research have received critical acclaim both nationally and internationally by opening new vistas in education. Peyton is currently on-line instructor at The New School for Social Research in New York City where he has successfully merged his unique approach to puppets and communication with high-tech, cutting-edge distance education.

Since the mid seventies Peyton has conducted seminars and workshops on the use and application of this paper utility under the name of Puppetools, Inc. In addition, Peyton's book on the subject entitled **Puppetools, An Introductory Guide & Applications Manual** was published in 1985.

HS

As education reform continues to dominate our worldwide political and social landscape, new business opportunities are developing within this lucrative market. To begin with, the use of the paper puppet in education creates a new form of paper consumption in the school environment. This innovative application has the potential to create demand for paper stocks which are more sophisticated than the "traditional school papers."

More importantly, the paper puppet is a tool which relies upon and emphasizes paper's almost infinite flexibility. In addition, it validates paper's role as an indispensable part of modern life by capitalizing on its creative and civilizing properties. The age of electronic education coincides with a revolution in the creative uses of paper in the communications field. Contrary to predictions about the obsolescence of print in the computer era, the reality is that print and electronic media have produced a healthy cross-fertilization which has increased paper consumption and spurred demand for new paper products (i.e. laser paper). Just as the paper industry has creatively met changing market demands brought about by computerization, it can creatively generate new paper uses.

While Mr. Peyton's invention and research have their roots in education, the resulting applications of paper are not limited to the education arena. In fact, the utility can be used in publishing, advertising, marketing and sales, to name a few. More importantly, the product holds universal appeal, thus providing an immediate international advantage.

This proposal will demonstrate the range of benefits which a corporate partner can derive from a strategic alliance with Puppetools, Inc. In effect, Mr. Peyton's life work provides the perfect vehicle for the paper industry to penetrate the education market. The proposal explores several scenarios through which Puppetools and a corporate paper partner can collaborate to increase paper's global visibility and market share. In addition, it explores how a working paper partner can use Puppetools as a creative base for worldwide public relations and market development, deriving the following benefits:

- an opportunity to mold, define, and even change the way people look at paper
- a strategic position as a promoter of educational excellence and reform
- an opportunity to display paper's three-dimensional potential, thereby reshaping the product and the way it is perceived
- a dynamic showcase for the introduction of new papers into the international market
- an increased awareness of the partner's name and position as an innovator
- a stronger platform for the introduction of specialty papers into the education market
- an opportunity to position the partner as "The Paper Company" for a generation raised on its products
- higher visibility within the consumer market through various related marketing programs. "

The following section explains the paper utility, its history, and its impact. It demonstrates how an interactive paper device has evolved into a viable communication tool which functions interchangeably as a language, a creative medium, and a technology representing an innovative role for paper.

Part I

A Paper Invention

The mission of this proposal is to launch a new showcase for the use of paper in education based on intellectual property and proprietary information developed by Mr. Peyton. The information is based on a true paper-driven invention; a vehicle for promoting and expanding the common perception of paper. The opportunities afforded by the invention are remarkably economical to achieve. In recent years, good

corporate citizens have found themselves funding many projects which only indirectly serve their interests. This proposal directly benefits the interests of International Paper. The proposal hinges, quite literally, on a paper invention: a multipurpose paper hinge utility. The utility functions interchangeably as a form of language, a form of media, and a form of technology. It represents an innovative role for paper.

Unlike the Sesame Street model which, despite its popularity, was never adopted as common teaching practice, Puppetools delivers a symbolically charged message to the education arena in which the illusive power of puppets is as easy to pick up as a piece of paper. Puppetools is not image-specific—in other words, almost any subject can serve as the basis for a paper puppet (an American Origami). In the classroom, it is a dual system: It creates a visual basis for language and ideas out of paper and the means to speak it. A paper puppet is a "handheld idea, a part of speech in a limitless interactive language of symbols and concepts."

Driven by a new vision of paper power and the human need to communicate, this concept spurs the consumption of construction paper and high quality art paper throughout the education spectrum and provides the commodity of paper with a kaleidoscopic media platform. Historically, the primary role of paper has been to carry information in the form of books and documents. When paper became "money," its role shifted from a passive to an active artifact of the world marketplace. Hard currency possessed a precedent-setting quality: it was no longer possible to view paper only as a passive handmaiden for print.

Paper Utilities

Puppetools' patented devices, called Publishing Utilities, are the technical foundation of an original learning theory developed by Jeffrey L. Peyton. They are built upon the precedent of paper used as a monetary currency and advance to the reality of paper as "communication currency." The puppet inventions, referred to as the Paper Talker and the Picture Puppet, are made available under US Patents 4,555,236, 4,880,404, and 4,869,702. These patents protect the paper hinge which the puppets employ in order to "talk." Anyone can construct this paper hinge through a series of simple folds.

Once constructed the hinge is surprisingly sturdy and extremely easy to operate, transforming the traditional hand puppet into a symbolic, living color, paper language—a "paper telephone" which gives paper a visual, interactive communication function. The paper hinge can be combined with an infinite number of characters to produce new puppets.

The resulting puppets can be marketed through multiple platforms. These include pre-printed puppet characters, pre-printed puppet patterns, pattern software, children's books, magazine inserts, packaging such as cereal boxes, and puppet kits which include specialty papers.

The Paper Telephone

Paper continues to serve as a conductor for emotive qualities such as warmth and nurturing. It is no accident that in an age of excellent synthetic textiles, there is a growing demand for natural fibers. The consumer's affection for cotton and wool fabrics coincides with an increasing interest in "natural, " acid-free papers. Humanity's affinity for fiber products is as old as the first piece of felt.

Ever since its invention in China two thousand years ago, paper has been regarded as bearing communicative powers which extend beyond the written word. The feel of the sheet is an integral part of the message. A parent holds a children's book, for example, (along with the child) and the book is cared

for, The paper in a greeting card contains more sentimental value than the computer printout. The pop-up card offers fun the computer printout. The pop-up card offers fun and momentary delight.

The Puppetools invention builds on this "warm" use of paper. It enables storybook characters to leap off the page into the hand; a new twist in the history of our active, image-driven society that could revolutionize children's book publishing. It demonstrates successfully that paper can become a tool for interpersonal communication quickly, practically, and economically. This is not a complex process. It simply requires that the paper form be used as a "telephone," a device through which communication is accelerated and enhanced.

The invention is an advance in visual, graphical communication and thinking. Whereas Microsoft's "Windows" moved computer users from a text world into a graphical world, Puppetools moves learning, thinking, and communicating into a visual, interactive mode.

Research & Development

The development of the Puppetools invention stems from several basic questions raised initially by the inventor:

- 1) What drives the unconditional response that children show for puppets?
- 2) Why do teachers often exempt themselves from the fun and the possibility of using the medium?

Peyton saw a powerful teaching chemistry going to waste. Children crave the imaginative interplay that puppets bring to their world. Why, then, shouldn't it be a regular part of classroom experience? And shouldn't teachers increase the opportunity to feel creatively "in sync" with their students?

Although teachers know that children love puppets, they often consider the medium impractical. They harbor myths, reinforced by popular TV models, that using puppets requires special theater know-how, scripts, extra time, theaters and fancy puppets. "My kids would never go for it, and, anyway, I could never pull it off," is a common refrain.

Peyton's research raised more questions:

Q. If puppets are to achieve the universal status of classroom chalk—routinely picked up by teachers to ask questions or make a point—what sort of puppetry would it be?

A. It would call for puppets used right out front, like a telephone or a microphone. It wouldn't matter if kids could see whoever was making the puppet talk.

Q. How would large numbers of teachers view puppets as a mainstream teaching medium?

A. It would be necessary to introduce a new model for using puppets. The model would dispel negative myths, especially one of the biggest myths about using puppets: fancy puppets are required.

Paper + Puppets = Miracle Media

In order to maximize the benefits of the medium, Peyton focused on a staple that is common to all classrooms: paper.



By linking the medium of puppets with construction paper, teachers could quickly bring any subject to life. The use of paper made it possible for the puppet medium to become as universal as paper itself.

Using paper moved the puppet medium into the realm of printing presses and die-cutting. If—through puppets—book figures and illustrations could spring to life in the hand, then a new phase in the evolution of puppet media—and book design—was possible.

The most important discovery was easy to overlook: children talk to paper puppet forms. Initially, many teachers express doubt that puppets—especially paper puppets—can get a significant response from children of all ages, backgrounds, and abilities.

Teachers simply believe that children are too sophisticated to take puppets seriously. They quickly discover that the children's sophistication is precisely what allows them to apply their imaginations in a situation which depends on the temporary suspension of literal reality. Whether it is second grade, sixth grade, or college-level Spanish, the element of play, facilitated by a simple paper puppet, stimulates and engages the classroom. This isn't a puppet magic trick. Rather, it indicates that kids are naturally willing to talk to and play along with paper puppets made either by themselves or their teachers. If any magic can be found, it is in the puppet's capacity to motivate the adult to meet students halfway—and play.

Puppetools has consistently broken through the skepticism, and has excited teachers unfamiliar with the puppet medium. They discover in paper a "miracle media:"

I don't think I could quit using puppets even if I wanted to. "Diane" has been part of our spelling lessons all week and today I started without her. "Where's Diane?" I heard three different students ask. I couldn't believe it was one of my tough guys. I can't believe the attitude of my students. They are different. They are excited. I am excited. I can hardly believe that a paper puppet can be so magical. Thank you. I feel you've handed me a very special gift.

This gift was paper which the teacher herself had cut, folded, and applied in a new, creative way. Even more important, the gift conferred creative power. It caused an awakening. Combining puppets with paper is a formula for unleashing the vast reservoir of creative talent in teachers. The successful promotion of this concept is capable of producing a "powershift" in the way educational consumers view themselves and the materials they purchase. If paper can be shown to possess magical, extra-intelligent properties, then a popular "love affair" with paper is possible.

Paper Technology: Link with Applied Brain Science

As nature's teaching media and play language, the invention builds upon the biological and social relationship between play and learning, established by Dr. Paul MacLean in his study, The Triune Brain in Evolution (Plenum Press, 1990). MacLean is senior research scientist in the Department of Neurophysiology at the National Institutes of Health, Bethesda, Maryland. The invention also builds on the "Theory of Neural Group Selection" advanced by Nobel Laureate Gerald M. Edelman in Bright Air, Brilliant Fire (Basic Books, 1992).

Based on this research, Peyton has developed a theory which establishes the "puppet dynamic" as a form of behavior unique to human play and evolution. In this view, communicative behavior, in which a handheld, lifelike form interacts and elicits a response, represents learning activity that externally mirrors and facilitates the inner mental processes leading to the development of consciousness.

According to Peyton, the hand puppet is an artifact of mental activity that calls upon a full integration of

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brain faculties. It is a practical link between education and applied brain science—a development which moves paper, ahead of publishing, into position as a primary means of facilitating global education reform.

Summary

John Naisbitt in Megatrends) coined the term "High Touch." High Touch Technology has a major role to play in educational reform, science, publishing, and literacy. As an instrument of change, Peyton's high-touch language neutralizes negative conditions in traditional patterns of language, communication, and behavior.

Because of the invention's ability to process emotions, to enhance communication, to signal safety and humor, and to inspire and socialize, its high-touch power naturally complements the computer in the education arena. The invention's role in processing multicultural issues and social perspectives is limitless. The 90s have been declared "The Decade of the Brain." The new technology can move the spirit of this theme into the hands of parents, teachers, and children worldwide.

At a time when educators seek to adopt concepts which promote "whole learning" and full integration of brain functions, arts-integrated models are gaining validity. Einstein's theories—indeed his life—were inspired by his great imagination. As science and art come full circle, a simple yet powerful paper technology has emerged at the center of this convergence. By investing in further development and application of this technology, the Paper Partner has an opportunity to showcase a dynamic and universal use of paper within the context of a world-class education program.

Part II

Mission and Impact- The World of Ordinary People

As with moving pictures, radio, and television—three innovations which began in the realm of theory—the paper utility has its impact in the real world of ordinary people. Just as a moviegoer enjoys the film without thinking about the science of cinematography, a child delights in the use of a paper utility without thinking about the marketing, economics, communicative abilities, educational properties, and universality of the concept. As with all other communication media, it works best when the nuts and bolts remain invisible. However, the nuts and bolts are essential to the success of any marketing project. The following section describes how sophisticated educational theory becomes sound commercial reality.

1. Marketing and Economics: In addition to the excitement, hope, and inspiration it will bring to customers, the invention will accelerate change in the marketplace. The new knowledge of this paper-communication process will increase the demand for high quality art paper by educators at all levels. Its demonstration of routine integrated use of paper as an active tool for teaching and learning can be engineered to bypass the traditional paper consumption bottlenecks in education and publishing in which vast quantities of paper move slowly through a complex manufacturing process. Especially when change accelerates, the ability to shorten time—in this instance by increasing the demand and consumption rate of higher quality paper products—can be the difference between loss or gain of market share. The corporate partner can provide avenues for wider distribution of this paper, which is often not available at teacher supply stores. Further, the paper partner can employ the utility as a means of marketing paper to the general public without focusing on its uses as a substrate for written or printed words. This means that paper can take on the role that Microsoft's "Windows" assumed when it began to supplant the text-oriented computer landscape. It means that paper can be sold for its three dimensional uses of which the

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paper puppet is only one communicative example. In this instance, the utility acts as a catalyst for enhanced consumption.

2. Communication: "A Paper Telephone" gives paper a visual-communication role. The idea of a symbolic, paper language will capture the public imagination, and fill a crucial need in education. The reality of paper as a monetary currency advances to the reality of paper as a "communication currency." The utility liberates paper from its role as a communication substrate. In other words, when paper is employed as a puppet, its tactile and visual qualities become paramount. What was once a two-dimensional sheet suddenly becomes a self-contained entity. The puppet does not make the paper. It is the paper that largely determines the success of the process.

3. Education Blockbuster Twenty years of research have demonstrated the rare and effective power that the invention offers to educators long stuck in their traditional use of language. There is a great need for a low-cost, highly effective innovation in education. Paper-powered Puppetools fills the bill.

For too long, education has relied simply on words which sat on the page. Contemporary reality requires that the paper which constitutes the page become part of the educational process. The paper's physical qualities tell a story about itself, our society, and the world at large which is as valuable as the printed word. The physical materials which are used in the educational process must become part of the total communication approach to learning. Students who understand the value of paper from an early age will grow into a paper literate generation which will intelligently consume paper for a lifetime. If anything, this level of paper literacy will be essential in a post-industrial age in which the Fourdrinier and the microchip will coexist in an ever more intimate symbiosis.

3. High Touch Media and Technology: The invention is a "high-touch" interactive publishing utility made for mass print applications. It is capable of boosting the consumption of books by increasing their perceived value in a high-tech marketplace.

This value-added quality results from the dimensional element which the inclusion of puppets adds to the book. Such a publication comprises nonelectronic "multimedia experience"—an experience which can be reinvented every time the book is opened.

4. Universal Ambassador: The invention crosses cultural and national barriers. Its ability to win friends and influence people will markedly enhance the competitive position of the paper partner in the international business arena. In 1970, Ping Pong opened the door to normal relations with China.

Today, a high-touch initiative could play a similar role. It could be used to send a message that the role of paper products are ambassadorial and educational. They are built not just to sell but to contribute. This concept also applies within our own borders. As the US government struggles to downsize, corporate America will be forced to play a larger role in domestic issues.

5. Development of World Paper Markets: The Pacific Rim countries, China in particular, are culturally oriented to paper crafts and are primed for educational innovation. Domestic markets include Scouting, Early Childhood Education, Head Start, Elementary and Intermediate school populations. Exhibitions at selected international education conferences would result in immediate demand; Retail, publishing and computer trade shows should also be targeted.

Part III Collaborative Scenarios In *Megatrends 2000*, John Naisbitt describes Education and Business as the key markets underlying the global economy. The key facilitators of business commerce and growth--Language, Culture, Information, Education--require a "fast food" access. Information is a

commodity.

This proposal represents an opportunity to set new standards for enhancing the flow of paper consumption in the education market. By promoting the role of paper in school reform, the paper partner establishes a bi-polar issues management strategy. As the environment continues to be an area of concern, the partner has the power to deflect the environmental spotlight away to the higher, more proactive ground of educational excellence and reform. Entering the education arena bow will allow a partner to assume a leadership position, instead of that of the grudging defender.

The proposed collaboration may be described in one phrase: **strategic alliance**. Standard corporate promotion of the ideas contained in this proposal will produce many of the results and benefits it describes. The following suggestions for collaboration may be implemented in small steps or large.

1. Secure the rights to Puppetools as an exclusive utility for use and application. and adopt Peyton as brainchild and spokesman. This move will immediately give the partner the industry-specific credibility it needs to place it at the forefront of the education market.. Peyton's reputation and years of research will discourage competitors from attempting a copy cat program. Lego (TM) adopted the ideas and theories of Seymour Papert to support and articulate the benefits of the Lego product. Today, virtually every school employs some type of Lego (TM) product. With a similar marketing technique, the same may be said about paper puppets in the not too distant future.
2. Use Puppetools to create a new corporate public relations platform. This scenario includes: Puppetools/ Partner exhibits at major international education conferences; use of speakers bureau to promote the Puppetools-Paper -Science message; the use of video news releases; the sponsorship of Puppetools for special events; and video documentation. An exhibit could be planned to include a hands-on action booth to attract human interest and a multimedia presentation displayed on large-screen television showing the product in action. With corporate support, Puppetools would become visible quickly enough to be a featured subject of talk shows, magazine covers and TV news shows. This public relations effort will position the partner as a good corporate citizen and help make the company name synonymous with creative uses of paper.
3. Sponsorship of Puppetools Seminars and Workshops at national and international venues. These workshops and seminars will simultaneously showcase the puppets and the papers by emphasizing paper's ability to enhance the puppets' creative and communicative strengths. Once the relationship between the paper and the puppets has been established, it is very easy to demonstrate other creative uses for the papers. The dual emphasis also serves to position the partner as a leader in the field of creative paper and to firmly plant that identity in the minds of both teachers and students in a manner similar to that which paper companies currently employ to influence creative directors, designers, and marketers.
4. Incorporate Puppetools into Corporate Children's Programs. Use Puppetools as the primary marketing and development vehicle for these programs. Variations of the puppets can be used for invitations; sections of the program can be conducted using the puppets; children can construct their own puppets and take them home. Such programs introduce children to paper in a nonthreatening manner by disguising the didactic element as play. In addition, these programs are a perfect way to introduce the Partner/Puppetools concept to the end user in a controlled and effective manner.
5. Assist Puppetools with research and development that explores the expanded use of the utility through a more extensive use of paper products. Many lines produced by paper manufacturers are well suited to the utility and may offer additional benefits and uses not presently evident. Such a research program

may lead to these types of discoveries and help in the development of new paper lines. A corporate partner can also assist in establishing higher education research projects to support the educational and scientific validity of the concept. Evidence on the effect of adult-child communicative play suggests that it is vital for teachers to engage children and to relate concepts in a playful presentation. This finding illustrates that the need has never been greater (or closer at hand) for emergence of an inexpensive communication model embodied in Peyton's paper invention.

6. Develop a television pilot which features paper puppet characters. Every visual element in the show—from the characters to the sets—is constructed of paper. Just as Gumby introduced claymation in the 1960s, this endeavor can launch "papermation." Currently, there exists no other medium as powerful and as far reaching as television, especially for children. Such a show will appeal to networks such as Nickelodeon, which offer continuous daytime programming to preschoolers and gradeschoolers. A well produced, well written, and well designed show of this nature will create instant awareness and subsequent demand for paper, as children and teachers seek to emulate the show when playing and teaching. More importantly, the corporate partner can support the show through the mass merchandising of the paper characters and related products. The television programs can also be marketed globally. Because the puppet is in many ways an alter ego of its user, it possesses endless cultural adaptability. At a time in which increasing internationalization is competing with growing national awareness, the cast of puppets can take on the cultural characteristics of the country in which they air. This flexibility is particularly relevant when considering the fact that Sesame Street was removed from the Japanese market because the characters were not specific to the Japanese culture.

This benefit is also in keeping with the current market trends such as the National Broadcasting Company's push to enter the Asian and Latin American markets, eventually capturing a global audience. The Corporate Paper Partner would directly benefit from the international exposure to a generation of paper consumers in a quickly developing world.

Conclusion

The viability of paper is assured as we near the end of the millennium. Still, competition is fierce and while paper remains one of the modern world's most important commodities, the industry is expected to invent new uses for this ancient material. From cereal boxes to "natural" new papers, cellulose fibers play an ever larger role in the way our society views itself. This can be seen in the way paper has made the transition from landfill villain to environmental hero.

Puppetools takes the process even further by heightening public sensitivity to a material which everyone takes for granted but without which contemporary life would be impossible. The past 1000 years could easily be called the Age of Paper. The time has come to market this workhorse of civilization with the respect and creativity it deserves and the unique communication power it can command.

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Picture Puppet Device (US Patent 4,880,404) and Paper Talker® Puppet Device (US Patents 4,555,236 and 4,869,702)

Publishing Utilities Function & Implications of the Invention

- Recasts the common hand puppet into a systematic print media form, a media made for communicating with children. Visual, motivational and hands-on, the universal energy of the puppet is practically and economically harnessed for mass communication. The result is a social language, a living language of image and form that bonds adult-child relationships and empowers shared learning experiences. A puppet is a handheld idea.
- The invention builds upon the precedent of paper used as monetary currency and advances to the reality of paper as "communication currency." Paper assumes a visual, interactive communication function. Paper becomes a standard communication device, a "paper telephone."
- The utility adapts to cultural artifacts like books and computers. The result is immediate access to communicative play components in mass media products. Play is evolutionary behavior that drives human learning and communication. As a form of "natural technology," the utility systematically generates this powerful human resource, which can be moved quickly and economically into the marketplace. The use of this media has demonstrated root changes in group behavior and psychology.
- The "soft technology" enables storybook characters to leap off the page or screen into the hand; a new twist in the history of our active, image-driven society that could transform children's book publishing and computer software.

‡ Eg. Whereas reading is primarily a silent, passive, oral, lap-or desk-bound practice, use of the utility leads to routine reading experiences that are social, expressive and animated. To children, interacting and playing with book characters is a larger-than-life experience. Book illustrations that literally spring to life allow greater opportunity for active exploration and participation in books and change the perceived value of books themselves.

- The utility integrates with other media used in advertising, marketing, promotion and public relations--thus adding a fresh, interactive element to mass communication projects.
- The invention builds upon the biological and social relationship between play and learning established by Dr. Paul MacLean in his study, The Triune Brain in Evolution (Plenum Press, 1990). Application of this media offers insight into the nature of learning and communication as defined by Dr. Laura E. Berk, whose research in play theory and children's communication was recently explored in Scientific American.

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Use of this technology will increase the role and application of brain science in education. The new technology holds implications for educational reform, science, publishing, and literacy. As an instrument of change, it neutralizes negative conditions in traditional patterns of language, communication, and behavior. Because of the invention's ability to elicit emotions, enhance communication, signal safety and humor, inspire and socialize, its high-touch power naturally complements the computer in the education arena. The invention's potential role in processing multicultural issues and social perspectives is limitless. The 90s have been proclaimed "The Decade of the Brain." The educational application of this technology offers true opportunity to move the spirit of this theme into the hands of parents, teachers, and children nationwide.

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